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# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference AMS.P52114WO		<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/GB 03/04935	International filing date (day/month/year) 13.11.2003	Priority date (day/month/year) 15.11.2002	
International Patent Classification (IPC) or both national classification and IPC G01V1/32			
Applicant WESTERNGECO SEISMIC HOLDINGS LIMITED et al.			
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheets.</p>			
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the opinion</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>			
Date of submission of the demand  27.05.2004		Date of completion of this report  18.01.2005	
Name and mailing address of the International preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer  Thomas, J  Telephone No. +49 89 2399-2226	



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/GB 03/04935**

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*):

**Description, Pages**

1-16 as originally filed

**Claims, Numbers**

1-19 as originally filed

**Drawings, Sheets**

1/11-11/11 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB 03/04935

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).  
*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	2,4,5,15-19
	No: Claims	1,3,6-14
Inventive step (IS)	Yes: Claims	
	No: Claims	1-19
Industrial applicability (IA)	Yes: Claims	1-19
	No: Claims	

2. Citations and explanations

**see separate sheet**

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

**1. Cited documents**

Reference is made to the following documents:

D1: GB 2 030 400

D2: WO 00/55648

**2. Lack of novelty (Art. 33(1,2) PCT) of the independent claims 1 and 11**

Claim 1 lacks novelty because the defined subject-matter is anticipated by D1 and D2 for the following reasons:

- 2.1 D1 shows methods wherein the response of an accelerometer is matched to the response of a geophone or other seismic transducer such as a hydrophone (D1: claim 1), wherein a calculus operation of one the outputs from either accelerometer or hydrophone is carried out (D1: claim 1) and a filter is derived wherein the instrument response of the accelerometer, and hence an output signal of the accelerometer, is taken into account for the selection of the filter characteristics (D1: claim 1, Fig. 2 and corresponding parts of description).  
Hence, the subject-matter defined in claim 1 is anticipated by the teachings of D1.
- 2.2 With respect to D2 it is noted that no correct filter can be constructed without the knowledge of the impulse response of the second transducer (p. 3, l. 17-22; p. 4, l. 19-24). Consequently, the construction of the filter must be based on the response of the other transducer, which is considered as implicit feature. Reference is also made to the description of the present application p. 9, first paragraph, which cites the use of an impulse response supplied by the manufacturer, hence as a function known to the user of the instrument.
- 2.3 Fig. 2 of D1 shows all means defined in claim 11, which renders this claim also not novel (Art. 33(1,2) PCT). In particular, the outputs of both transducers (52 and 54) are taken into account, calculus operations (70, 72) are provided, and the construction of the filters are based on the outputs of both transducers (see also D1, abstract).

**3. Dependent claims**

The additional features defined in the dependent claims are either known from D1 or

D2, or are part of the common knowledge of the man skilled in the field of either seismic measuring techniques or filtering techniques, which renders the defined subject-matter either not novel (Art. 33(1,2) PCT) or not inventive (Art. 33(1,3) PCT). Short indications therefor are given in the following:

**Claim 2:** Dividing two filter responses in the frequency domain in order to eliminate the transfer functions is part of the common knowledge of the skilled man and can be seen in every basic textbook which deals with seismic filtering techniques (Art. 33(1,3) PCT).

**Claim 3:** D1 shows explicitly a numerical technique (Art. 33(1,2) PCT).

**Claims 4 and 5:** The time relation between hydrophones and accelerometers and the corresponding integration or differentiation procedure are well-known to the skilled man and can not present an inventive contribution over the prior art (Art. 33(1,3) PCT).

**Claims 6, 8-10:** The use of such filter is trivial and also shown in D1 and D2, as well as the combination of the matched output signals from both transducers, or the application of several processing steps on the data (Art. 33(1,2) PCT).

**Claim 7:** The summing step shown in D1 (70) indicates that the data is synthesised rendering the additional feature of this claim not novel.

**Claim 12:** The apparatus shown in D1 Fig. 2 is used to apply the method as in claim 1, rendering this apparatus not novel over the prior art (Art. 33(1,2) PCT).

**Claims 13 and 14:** The additional features are known from D1 and/or D2 (see remarks concerning claims 6, 8-10 above), rendering the subject-matter defined in these claims not novel (Art. 33(1,2) PCT).

**Claim 15-19:** The storage of any of the methods claimed in claims 1-10 on a computer readable medium, as well as the programming of a computer or a controlling program for a computer to carry out such programs is well known to the skilled man and can not render any of claims 16-19 inventive over the state of the art (Art. 33(1,3) PCT).

**4. Further deficiencies**

- 4.1 The most relevant background art disclosed in the documents D1 and D2 should be mentioned in the description (Rule 5.1(a)(ii) PCT).
- 4.2 Independent claim 1 and 11 are not in the two-part form in accordance with Rule 6.3(b) PCT, with those features known in combination from the prior art (document D1 and/or D2) being placed in the preamble (Rule 6.3(b)(I) PCT) and with the remain-

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/GB 03/04935

- ing features being included in the characterising part (Rule 6.3(b)(ii) PCT).
- 4.3 The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).
- 4.4 Figure page 9/11 does not fulfill the requirements of Rule 11.6 and 11.13 PCT.